
Group Project

Subject: Basic Cross-Platform Application Programming With .NET

Shoes Managements

Prepared by Group 9

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Revision History

Name	Date	Reason For Changes	Version
Duy Thai	24 September 2021	Initial draft	1.0 draft 1

1. Case Study

1.1. Introduction

According to statistics in Ho Chi Minh City, the demand for fashion is very high, especially for shoes. Therefore, many businesses and stores want to improve sales productivity with shoe product by using software to store information, minimize error in trading, faster trading and reduce time instead of using traditional ways on paper. So we create a desktop application for shoes management that employees, manager can store, sell their products more easily.

1.2. User function

1.2.1 Manager function

- + Manage shoes product
 - Create, update, delete, view, search product.

1.2.2 Staff function

- + Manage order
 - Update, view, search order.
 - Create order by search and select old customer or add new customer.
- + Manage customer
 - Create, update, view, search customer.
- + View product
 - View, search product list.

1.2.3 Admin function

- + Statistics
 - View order report by day in current month.
 - View order report by month with select date range of selected month in current year.
 - View order report by year with select date range of selected year.

1.3. Problem

1.3.1 Customer Problem

- Using paper or excel, word to store data, it's hard to learn and take time.

- Hard to record transaction, calculate and pay money by accept only cash or few payment methods
- Import product to inventory take time to records.
- Checking product in stock take time to move.

1.3.2 Solution

We recommend using a software to make everything more easier. Building an desktop application.

1.3.3 Benefit

- Save time, minimize errors.
- Easily manage customer information, product information, order record.
- Easy to calculate order money, more payment methods to use that will increase the income.
- Viewing report to know current income of the store.

1.3.4 Goals

- Increase sales performance.
- Earn more profit by faster work.
- Reach more customer.

2. Database Design

2.1. Entity relationship diagram

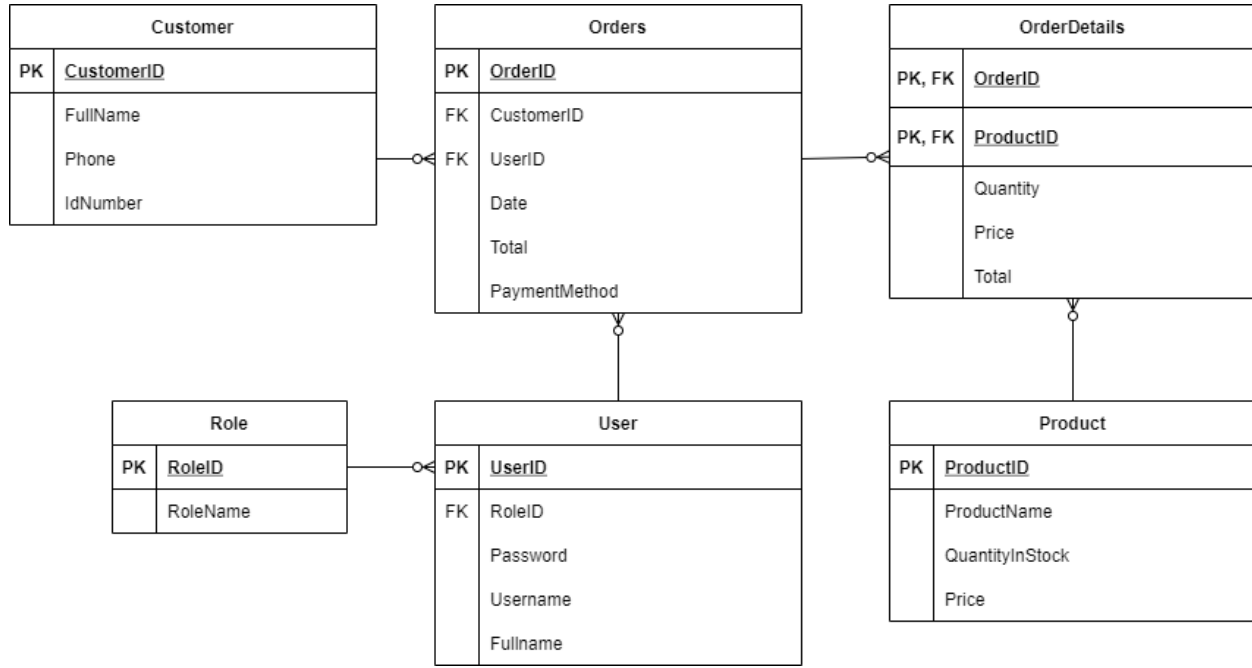


Figure . Partial data model of the Shoes Management System.

2.2. Database

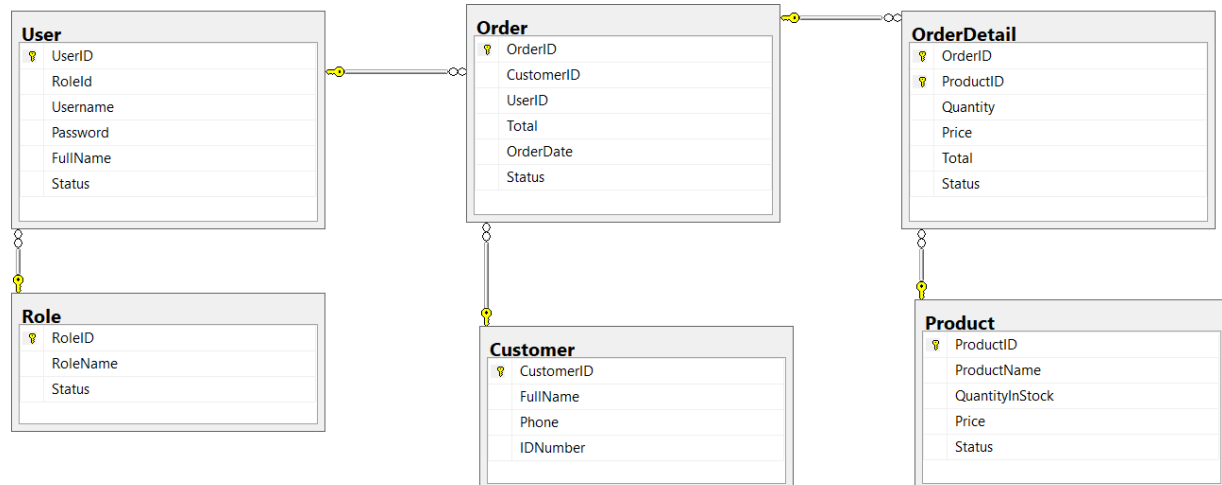


Figure . Database of the Shoes Management System.

3. System Architecture

3.1. Three layer architect

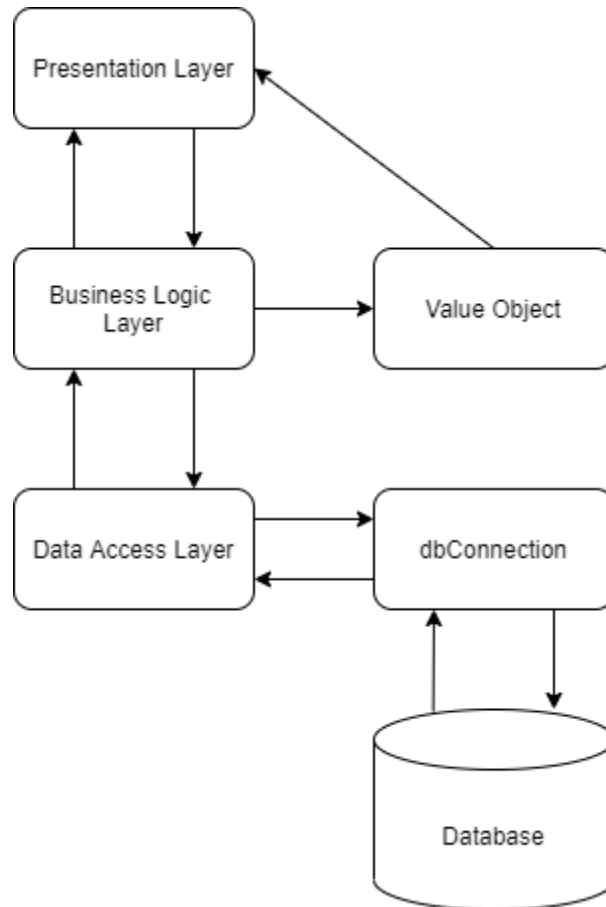


Figure . System design of the Shoes Management System.

Our work are building an window form application with C# .NET 5.0. We implement the Three Layer Architect for this project. For faster coding, we using Entity Framework Core 5.0 and Microsoft SQL Server 2014 version for data source. By following this architecture that organizes application into three logical and physical computing tiers: the presentation tier, or user interface; the logic tier, where data is processed; and the data tier, where the data associated with the application is stored and managed. The benefit of three-tier architecture is that because each tier runs on its own infrastructure, each tier can be developed simultaneously by a separate development team, and can be updated or scaled as needed without impacting the other tiers.

3.2. Class Diagram

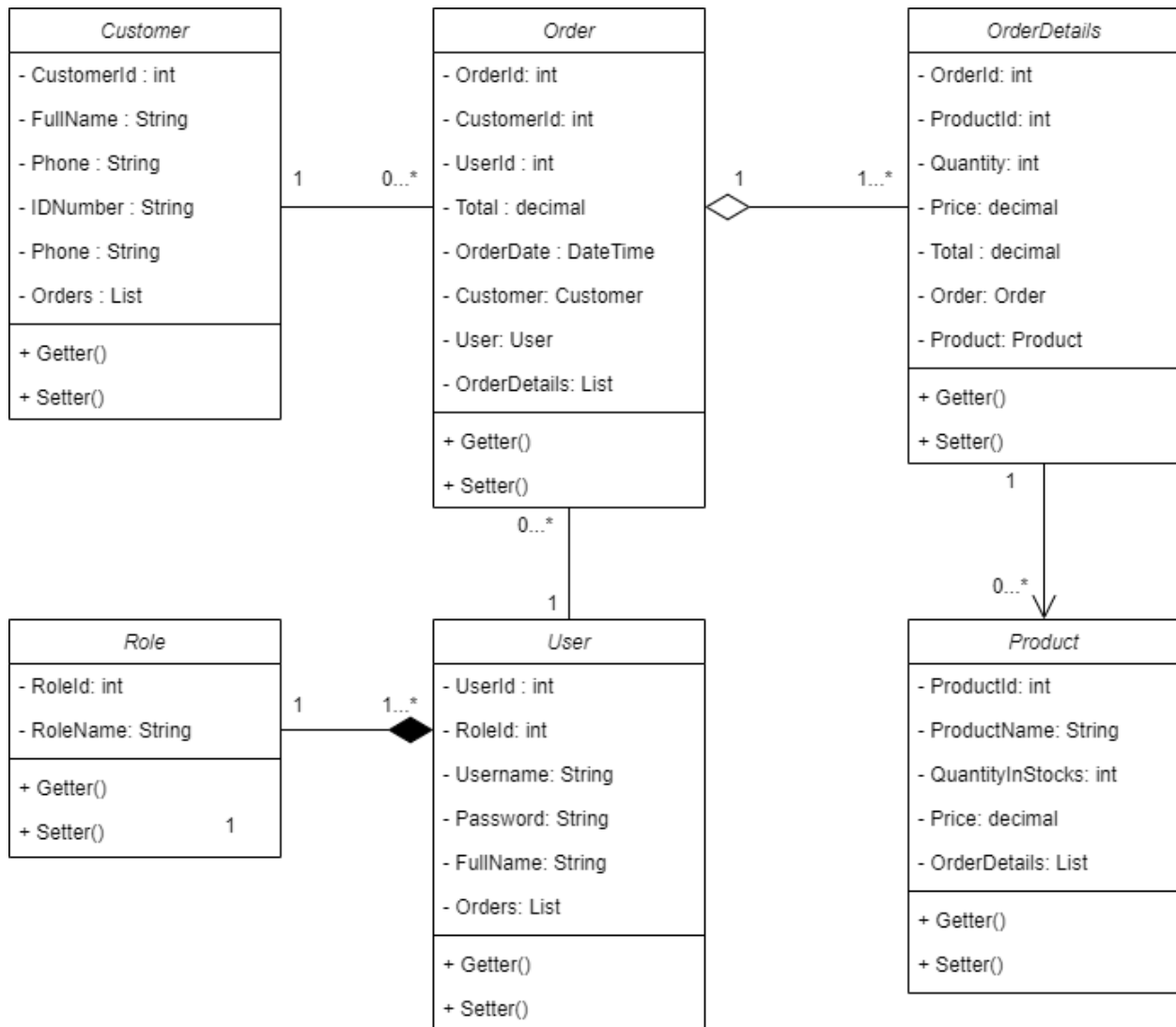


Figure . Class diagram of the Shoes Management System.

3.3. Use case diagram

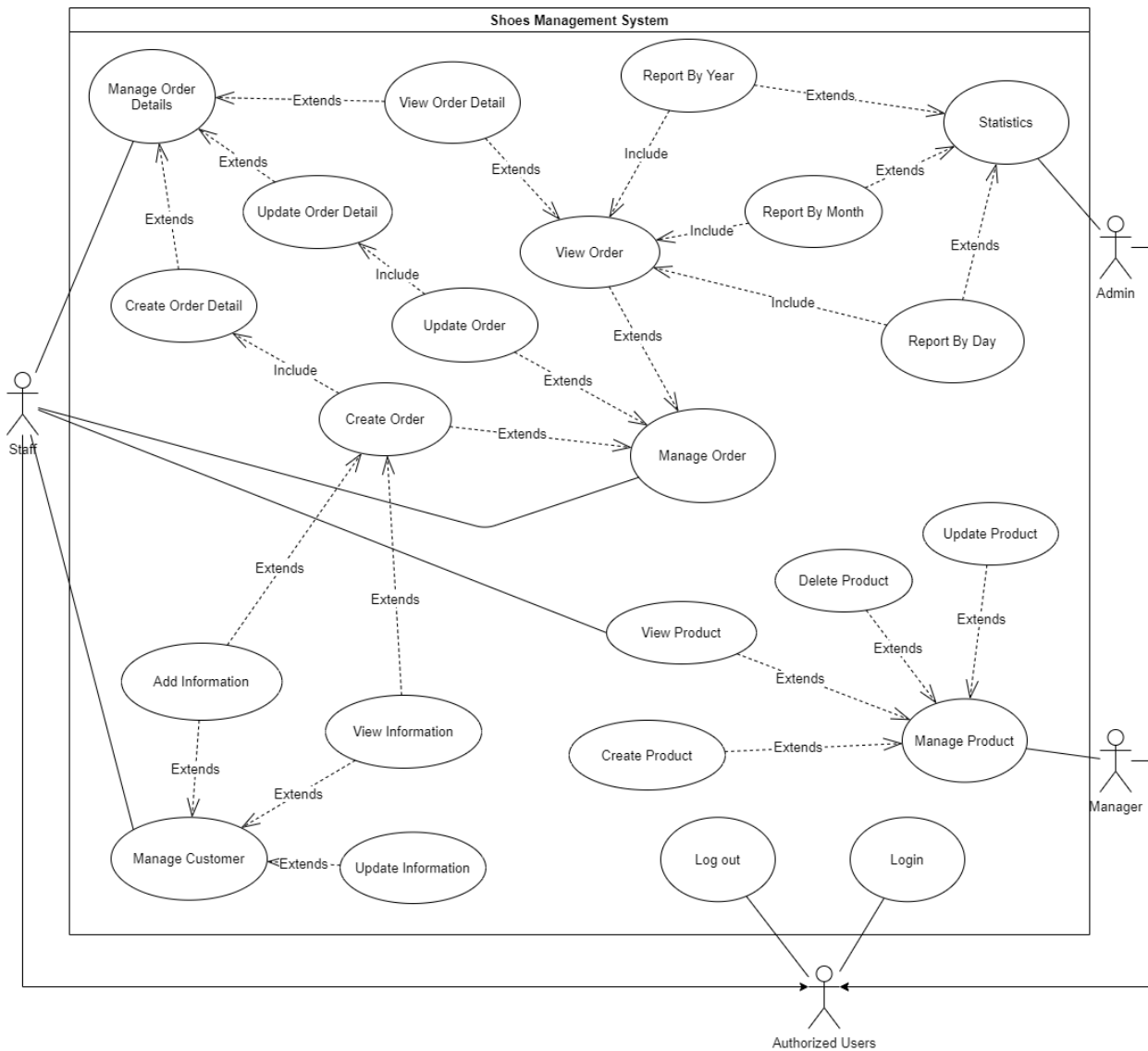


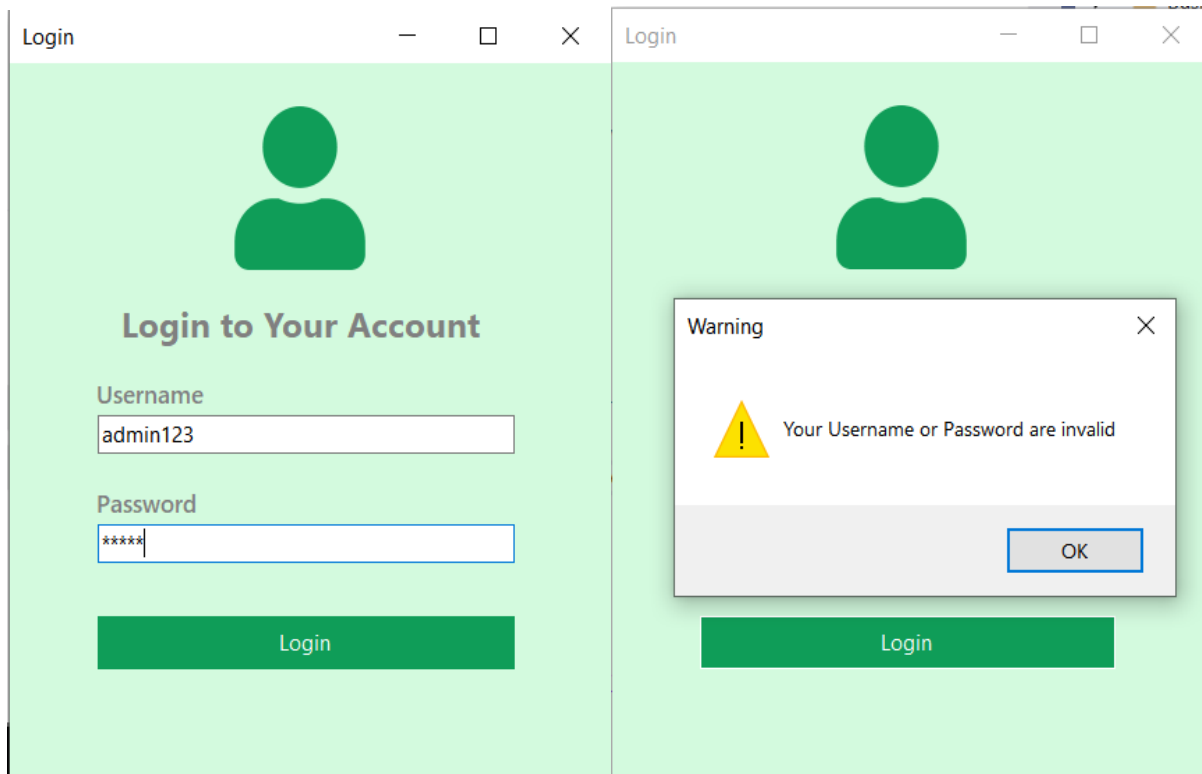
Figure . Use Case diagram of the Shoes Management System.

4. Implementation

4.1. Login and Logout

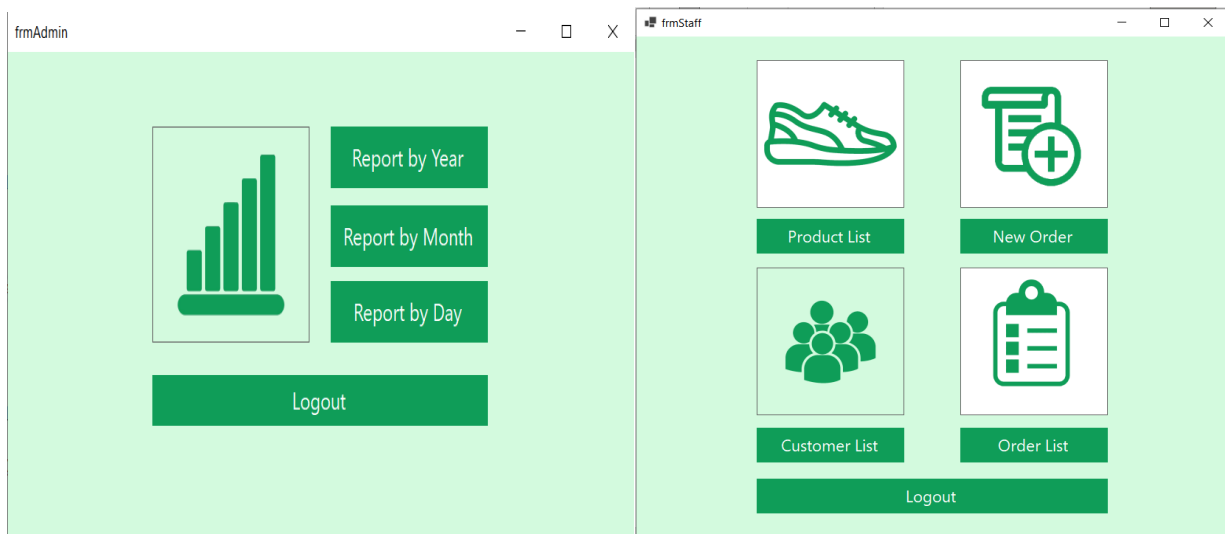
Step 1 : At Login form, click on “Login” to move to another page (picture 4.1)

- + Login form fill username and password, click “Login” (picture 4.1)
- + If your account is not exist or leave the field empty, Error warning will display (picture 4.2)
- + If your account if exist and username, password is correct
 - If your roleId is 1, you will move to page for admin
 - If your roleId is 2, you will move to page for manager
 - If your roleId is 3, you will move to page for staff



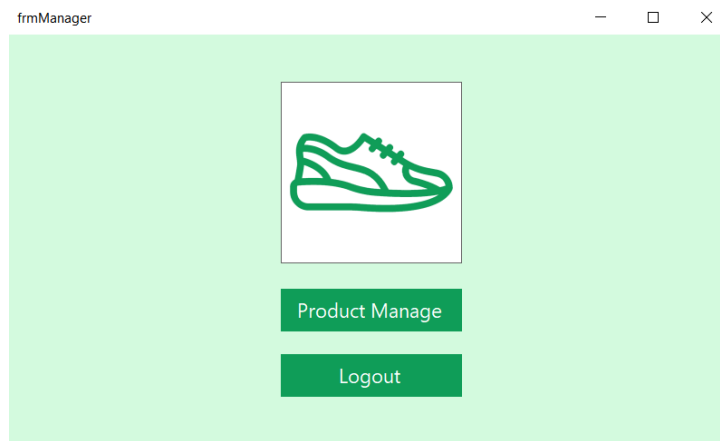
(4.1)

(4.2)



(4.3)

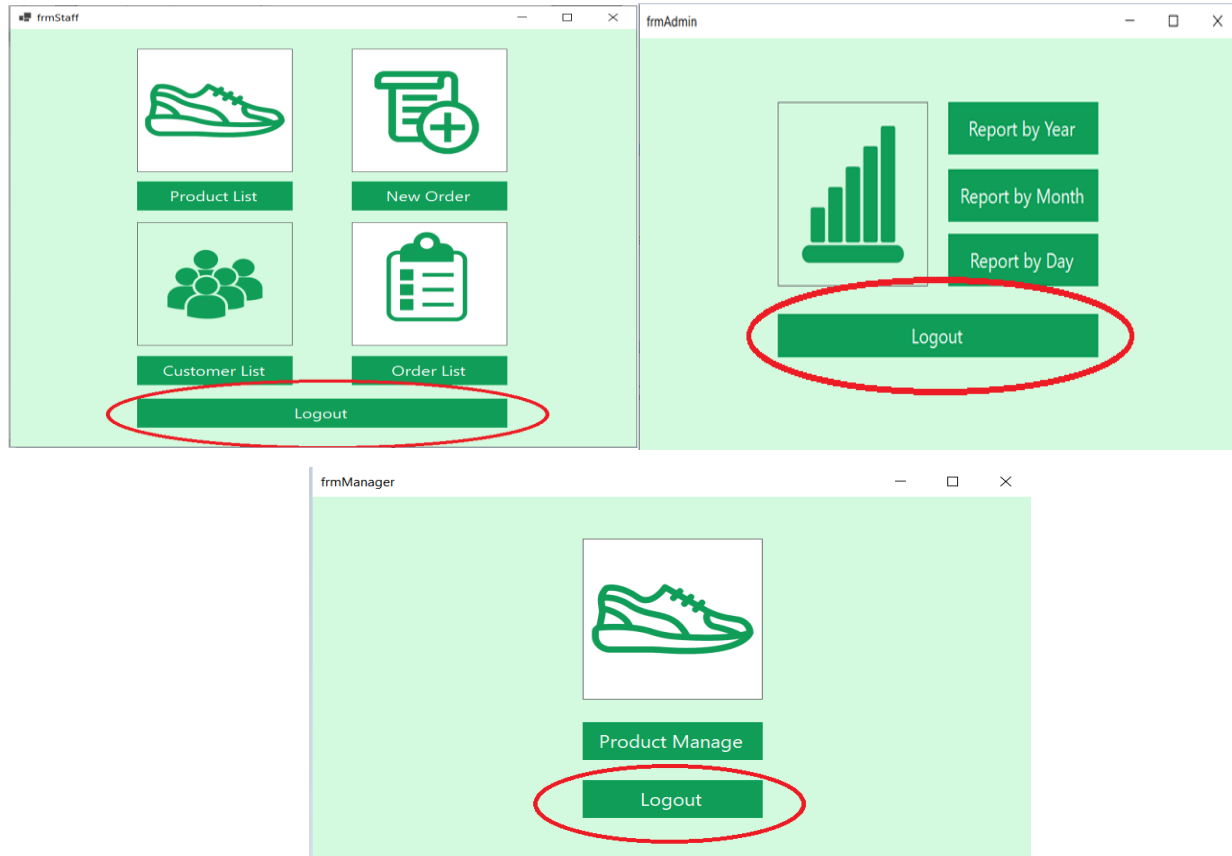
(4.4)



(4.5)

- + After login in, the interface of each role will appear
 - Admin(4.3),
 - Staff(4.4),
 - Manager(4.5).

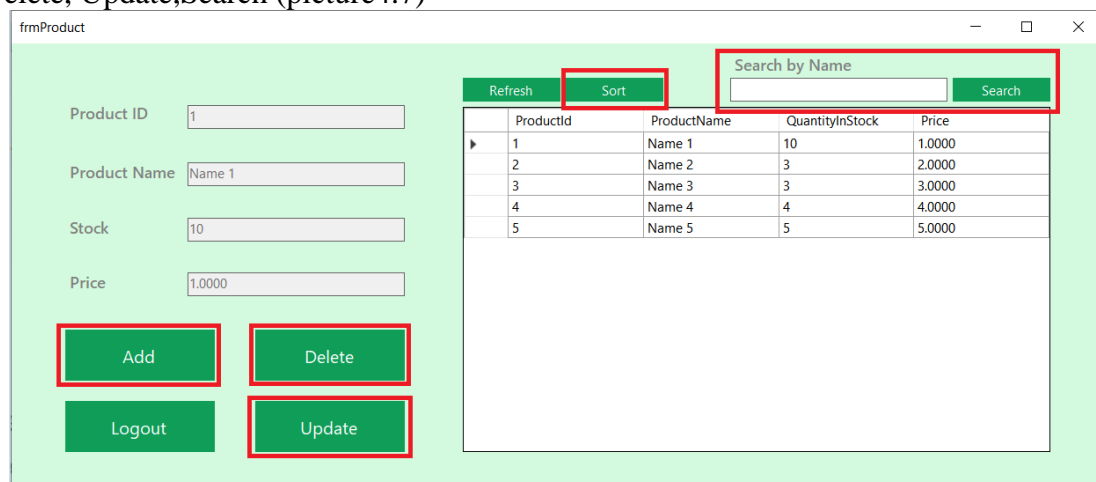
At the Staff or admin or manager page have logout button.
After Logout you will move to sign up/sign in page.(picture 4.1)



(4.6)

4.2. Manager

- + Step 2.1: After logging in as Manager, we have an interface includes functions: Add, Delete, Update, Search (picture 4.7)



(4.7)

- + Step 2.2: Click Add we will have an interface to add products (picture 4.8)
- + Step 2.3: Fill in the new product information in the form and click Add. The result will look like picture 4.9

Product Update

Add new Product

Product ID

Product Name

Stock

Price

(4.8)

Search by Name

	ProductId	ProductName	QuantityInStock	Price
▶	1	Name 1	10	1.0000
	2	Name 2	3	2.0000
	3	Name 3	3	3.0000
	4	Name 4	4	4.0000
	5	Name 5	5	5.0000
	6	Name 6	7	50000.0000

(4.9)

- + Step 2.2: Click Update we will have an interface to add products (picture 4.10)
- + Step 2.3: Fill in the new product information in the form and click Update. The result will look like picture 4.11

Product Update

Update a Product

Product ID

Product Name

Stock

Price

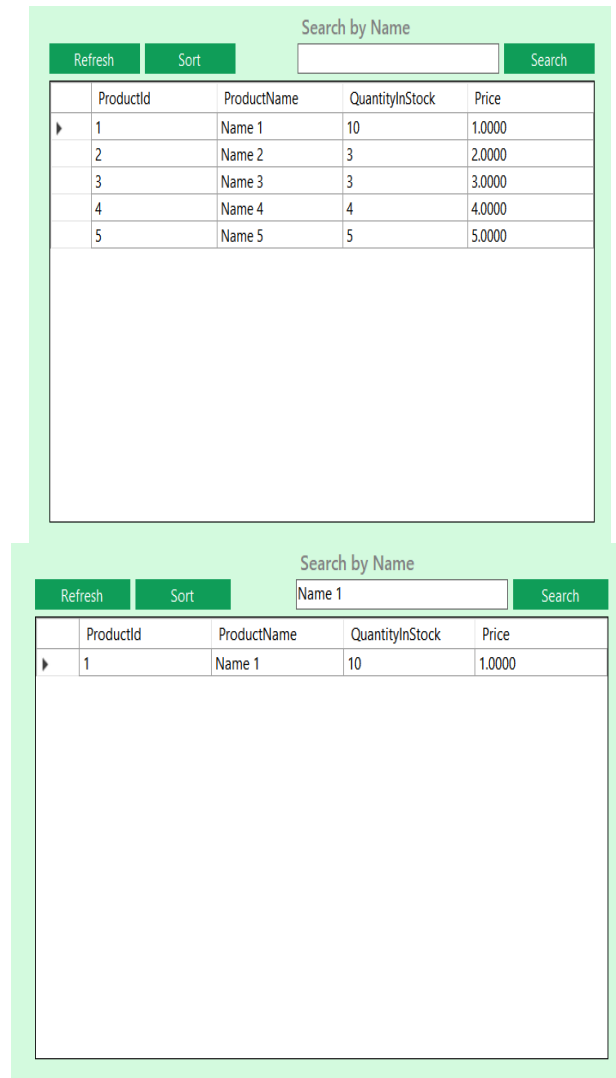
(4.10)

Search by Name

	ProductId	ProductName	QuantityInStock	Price
	1	Name 1	10	1.0000
	2	Name 2	3	2.0000
	3	Name 3	3	3.0000
	4	Name 4	4	4.0000
	5	Name 5	5	5.0000
▶	6	Name 6	7	50000.0000

(4.11)

- + Step 2.4: Manager can find product information through "Search by Name" by entering the product name in the blank box and pressing the "Search" button (picture 4.12)



The image displays two screenshots of a web application interface, illustrating a search functionality. Both screenshots feature a light green header bar with the text "Search by Name" and two buttons: "Refresh" and "Sort". Below the header is a search input field and a "Search" button.

Top Screenshot: The search input field is empty. Below it is a table with 5 rows of product data.

	ProductId	ProductName	QuantityInStock	Price
▶	1	Name 1	10	1.0000
	2	Name 2	3	2.0000
	3	Name 3	3	3.0000
	4	Name 4	4	4.0000
	5	Name 5	5	5.0000

Bottom Screenshot: The search input field contains the text "Name 1". The table below it shows only the first product, "Name 1", with a quantity of 10 and a price of 1.0000.

	ProductId	ProductName	QuantityInStock	Price
▶	1	Name 1	10	1.0000

(4.12)

- + Step 2.5: Manager can press the "Refresh" (picture 4.3) button to refresh the data or "Sort" (picture 4.14) button to sort the order of QuantityInStock

Search by Name				
Refresh	Sort	<input type="text"/>	Search	
ProductId	ProductName	QuantityInStock	Price	
1	Name 1	10	1.0000	
2	Name 2	3	2.0000	
3	Name 3	3	3.0000	
4	Name 4	4	4.0000	
5	Name 5	5	5.0000	

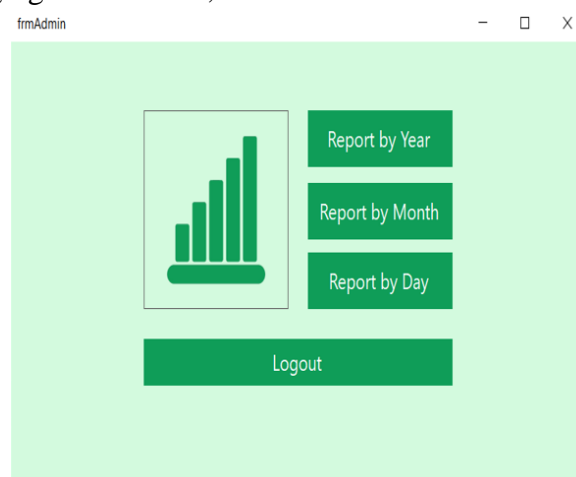
(4.13)

Search by Name				
Refresh	Sort	<input type="text"/>	Search	
ProductId	ProductName	QuantityInStock	Price	
5	Name 5	5	5.0000	
4	Name 4	4	4.0000	
3	Name 3	3	3.0000	
2	Name 2	3	2.0000	
1	Name 1	10	1.0000	

(4.14)

4.3. Admin

- + Step 3.1: After logging in to Admin, we will have an interface like Figure 4.15



(4.15)

- + Step 3.2: Admin click “Report by Year” to see a statistical report of orders by year
Admin can manipulate to find orders by clicking on the "Year" box to find the year, and clicking to find the start and end dates at “Start Day and End Day”, then click at “Search” button (picture 4.16)
- + Step 3.3: Admin click “Report by Month” to see a statistical report of orders by month
Admin can manipulate to find orders by clicking on the "Month" box to find the month, and clicking to find the start and end dates at “Start Day and End Day”, then click at “Search” button (picture 4.17)

frmStatistic

Year

2021

Start Day

06 - 11

End Day

06 - 11

Search

Asc Sort

Desc Sort

Refresh

Orderid	StaffName	CustomerName	Idnumber	Total	OrderDate
3	Tai Khoan Staff	Tran Van A12	000000001	10000.0000	11/6/2021
13	Tai Khoan Staff	Nguyen Thi B	000000002	20000.0000	11/6/2021 1:0...
14	Tai Khoan Staff	Vo VaN C	000000003	30000.0000	11/6/2021 2:0...
15	Tai Khoan Staff	Phung D	000000004	40000.0000	11/6/2021
20	Tai Khoan Staff	Phung D	000000004	500.0000	11/6/2021
21	Tai Khoan Staff	Phung D	000000004	10000.0000	11/6/2021
22	Tai Khoan Staff	Tran Van A12	000000001	1.0000	11/6/2021 3:0...
23	Tai Khoan Staff	Tran Van A12	000000001	12.0000	11/6/2021 3:1...

Total 110513.0000

Logout Back

frmStatistic

Month

11

Start Day

6

End Day

6

Search

Asc Sort

Desc Sort

Refresh

Orderid	StaffName	CustomerName	Idnumber	Total	OrderDate
3	Tai Khoan Staff	Tran Van A12	000000001	10000.0000	11/6/2021
13	Tai Khoan Staff	Nguyen Thi B	000000002	20000.0000	11/6/2021 1:0...
14	Tai Khoan Staff	Vo VaN C	000000003	30000.0000	11/6/2021 2:0...
15	Tai Khoan Staff	Phung D	000000004	40000.0000	11/6/2021
20	Tai Khoan Staff	Phung D	000000004	500.0000	11/6/2021
21	Tai Khoan Staff	Phung D	000000004	10000.0000	11/6/2021
22	Tai Khoan Staff	Tran Van A12	000000001	1.0000	11/6/2021 3:0...
23	Tai Khoan Staff	Tran Van A12	000000001	12.0000	11/6/2021 3:1...

Total 110513.0000

Logout Back

(4.16)

(4.17)

- + Step 3.4: Admin click “Report by Day” to see a statistical report of orders by day
Admin can manipulate to find orders by clicking on the "Month" box to find the day, and clicking to find the start and end dates at “Start Day and End Day”, then click at “Search” button (picture 4.18)

frmStatistic

Day

6

Asc Sort

Desc Sort

Refresh

Orderid	StaffName	CustomerName	Idnumber	Total	OrderDate
3	Tai Khoan Staff	Tran Van A12	000000001	10000.0000	11/6/2021
13	Tai Khoan Staff	Nguyen Thi B	000000002	20000.0000	11/6/2021 1:0...
14	Tai Khoan Staff	Vo VaN C	000000003	30000.0000	11/6/2021 2:0...
15	Tai Khoan Staff	Phung D	000000004	40000.0000	11/6/2021
20	Tai Khoan Staff	Phung D	000000004	500.0000	11/6/2021
21	Tai Khoan Staff	Phung D	000000004	10000.0000	11/6/2021
22	Tai Khoan Staff	Tran Van A12	000000001	1.0000	11/6/2021 3:0...
23	Tai Khoan Staff	Tran Van A12	000000001	12.0000	11/6/2021 3:1...

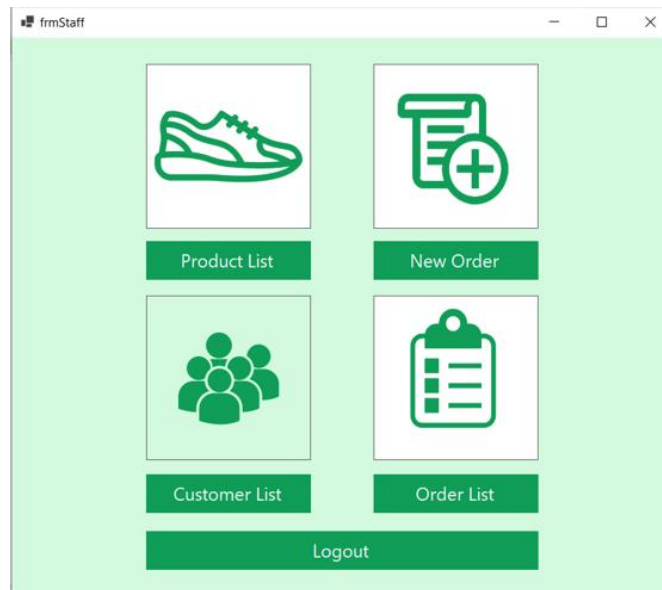
Total 110513.0000

Logout Back

(4.18)

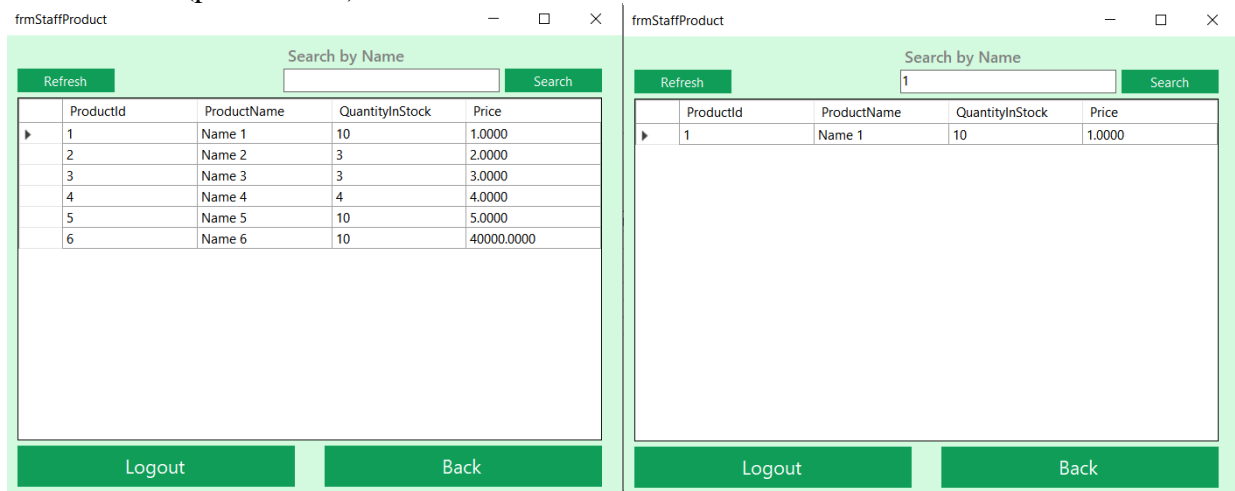
4.4. Staff

- + Step: 4.1 After logging in to Staff, we will have an interface with functions: Product List, New Order, Customer List, Order List (picture 4.19)



(4.19)

- + Step 4.2: Clicking on the “Product List” will display the product information form (picture 4.19)
- + Step 4.3: Staff can find the product in the “Search by Name” box and click the “Search” button (picture 4.20)



(4.20)

- + Step 4.4: Clicking on the “New Order” will display the order information form (picture 4.19).
- + Step 4.5: Staff can find the product in the “Search” box and select by “Name” (picture 4.22) or “ID” (picture 4.23) in the combobox then click on the “Search” button (picture 4.21) and see the results displayed (picture 4.22 and 4.23).
- + Step 4.6: Staff click on “Refresh” button to refresh the state of the form (picture 4.21).

frmNewOrder

Search

Search

Refresh

	CustomerId	FullName	Phone	Idnumber
▶	1	Tran Van A12	090011111	000000001
	4	Nguyen Thi B	090011112	000000002
	5	Vo VaN C	090011113	000000003
	6	Phung D	090011114	000000004
	7	Lai Van E	090011115	000000005
	12	Dinh Thinh	0944209261	1
	13	2	1	2
	14	Hahah	123	123

Logout

Back

New

Select

frmNewOrder

Search

1

ID

Search

Refresh

	CustomerId	FullName	Phone	Idnumber
▶	1	Tran Van A12	090011111	000000001
	12	Dinh Thinh	0944209261	1
	14	Hahah	123	123

Logout

Back

New

Select

(4.21)

(4.22)

frmNewOrder

Search

Tran Van A12

Name

Search

Refresh

	CustomerId	FullName	Phone	Idnumber
▶	1	Tran Van A12	090011111	000000001

Logout

Back

New

Select

(4.23)

- + Step 4.7: Staff click “New” button to create a new order for a new customer (picture 4.23)
- + Step 4.8: Fill in the information and the “Add new Customer” form (picture 4.24), then click the “Add” button, the new customer's data will be displayed in the list of users (picture 4.25).

frmOrderNewCustomer

Add new Customer

Customer ID

Full Name

Phone

ID Number

(4.24)

frmNewOrder

Search

	CustomerId	FullName	Phone	Idnumber
▶	1	Tran Van A12	090011111	000000001
	4	Nguyen Thi B	090011112	000000002
	5	Vo VaN C	090011113	000000003
	6	Phung D	090011114	000000004
	7	Lai Van E	090011115	000000005
	12	Dinh Thinh	0944209261	1
	13	2	1	2
	14	Hahah	123	123
	15	Yummi	777	1234

(4.25)

- + Step 4.9: Staff clicks the “Select” button to add products to the customer's order, Order Detail form will appear (picture 4.26).

frmOrderProduct

Customer name : Yummi Customer ID: 1234

Search by Name

	ProductId	ProductName	QuantityInStock	Price
	1	Name 1	10	1.0000
	2	Name 2	3	2.0000
	3	Name 3	3	3.0000
	4	Name 4	4	4.0000
	5	Name 5	10	5.0000
▶	6	Name 6	10	40000.0000

Quantity

Quantity

Order Details

(4.26)

- + Step 4.10: Staff will adjust the number of products in the “Order Detail” by selecting each product information and adding products with the “Add” button or removing products with the “Minus” button. (picture 4.27)

frmOrderProduct

Customer name : Yummi Customer ID: 1234 Total Money 80008.0000

Refresh Search by Name Search

ProductId	ProductName	QuantityInStock	Price
1	Name 1	10	1.0000
2	Name 2	3	2.0000
3	Name 3	3	3.0000
4	Name 4	4	4.0000
5	Name 5	10	5.0000
6	Name 6	10	40000.0000

Quantity Add

Quantity Minus

Order Details Remove One Remove All

ProductName	Quantity	Price	Total
Name 1	1	1.0000	1.0000
Name 2	2	2.0000	4.0000
Name 3	1	3.0000	3.0000
Name 6	2	40000.0000	80000.0000

Logout Back Next

(4.27)

- + Step 4.11: After adjusting the quantity of the order, Staff clicks “Next” button will display bill information including user and product information (picture 4.28).
- + Step 4.12: Choose a payment method at “Payment Method” combobox including: Cash/Visa/Master Card/Momo (picture 4.28).
- + Step 4.13: Then press the Bill button to issue the invoice, the table shows "sucessful" which means the invoice has been successfully issued (picture 4.29).

frmBill

Name : Yummi Phone : 777 ID Number : 1234

Payment Method

ProductName	Quantity	Price	Total
Name 1	1	1.0000	1.0000
Name 2	2	2.0000	4.0000
Name 3	1	3.0000	3.0000
Name 6	2	40000.0000	80000.0000

Total Money 80008.0000

Bill

Message X

Sucessful

OK

frmBill

Name : Yummi Phone : 777 ID Number : 1234

Payment Method Cash

ProductName	Quantity	Price	Total
Name 1	1	1.0000	1.0000
Name 2	2	2.0000	4.0000
Name 3	1	3.0000	3.0000
Name 6	2	40000.0000	80000.0000

Total Money 80008.0000

Bill

(4.28)

(4.29)

- + Step 4.14: Clicking on the “Customer List” will display the customer information form (picture 4.19)

The screenshot shows the 'frmCustomer' application window. It features a search bar at the top with a dropdown menu and buttons for 'Search', 'Refresh', and 'Sort'. On the left side, there are four green buttons: 'Add', 'Update', 'Logout', and 'Back'. The main area contains a table with the following data:

	CustomerId	FullName	Phone	Idnumber
▶	1	Tran Van A12	090011111	000000001
	4	Nguyen Thi B	090011112	000000002
	5	Vo VaN C	090011113	000000003
	6	Phung D	090011114	000000004
	7	Lai Van E	090011115	000000005
	12	Dinh Thinh	0944209261	1
	13	2	1	2
	14	Hahah	123	123
	15	Yummi	777	1234

(4.30)

- + Step 4.15: Staff click on “Add” button to add a new customer (picture 4.30).
- + Step 4.16: Fill in the information in the “Add new Customer” form and click on “Add”, Staff can click the clear button to start over if the information is wrong (picture 4.31).
The new person's information has been added to the customer information system (picture 4.32).

The screenshot shows the 'frmCustomerAdd' application window. It has a title 'Add new Customer'. The form contains four input fields: 'Customer ID', 'Full Name' (with the value 'Ahri'), 'Phone' (with the value '123'), and 'ID Number' (with the value '111'). There is a green 'Add' button at the bottom and a green 'Clear' button next to the 'ID Number' field.

(4.31)

The screenshot shows the 'frmCustomer' application window after adding a new customer. The table now includes a new row for the customer 'Ahri' with ID 16 and ID number 111.

	CustomerId	FullName	Phone	Idnumber
▶	1	Tran Van A12	090011111	000000001
	4	Nguyen Thi B	090011112	000000002
	5	Vo VaN C	090011113	000000003
	6	Phung D	090011114	000000004
	7	Lai Van E	090011115	000000005
	12	Dinh Thinh	0944209261	1
	13	2	1	2
	14	Hahah	123	123
	15	Yummi	777	1234
	16	Ahri	123	111

(4.32)

- + Step 4.17: Staff click on the information of one customer then click on “Update” button to update customer (picture 4.30).
- + Step 4.18: Fill in the information in the “Update new Customer” form and click on “Update”, Staff can click the “Clear” button to start over if the information is wrong or “Reset” to return to the original state (picture 4.33).
- + The new person's information has been added to the customer information system (picture 4.34).

frmCustomerUpdate

Update Customer

Customer ID

14

Full Name

Hahah

Phone

222

ID Number

222

Clear

Reset

Update

Search

Search

Refresh

Sort

	CustomerId	FullName	Phone	Idnumber
▶	1	Tran Van A12	090011111	000000001
	4	Nguyen Thi B	090011112	000000002
	5	Vo VaN C	090011113	000000003
	6	Phung D	090011114	000000004
	7	Lai Van E	090011115	000000005
	12	Dinh Thinh	0944209261	1
	13	2	1	2
	14	Hahah	222	222
	15	Yummi	777	1234
	16	Ahri	123	111

(4.33)

(4.34)

- + Step 4.19: Clicking on the “Order List” will display the order information form(picture 4.19)
- + Step 4.20: Staff click on the customer information will display the “Order Detail” form to see the customer's order(picture 4.35).

frmOrder

Order ID

24

ID Number

1234

Staff Name

Tai Khoan Staff

Total

80008.0000

Customer Name

Yummi

Order Date

11/6/2021 7:32:44 PM

Refresh

Sort

Search

Name

Search

	OrderId	StaffName	CustomerName	Idnumber	Total	OrderDate
	3	Tai Khoan Staff	Tran Van A12	000000001	10000.0000	11/6/2021
	13	Tai Khoan Staff	Nguyen Thi B	000000002	20000.0000	11/6/2021 1:00 ...
	14	Tai Khoan Staff	Vo VaN C	000000003	30000.0000	11/6/2021 2:00 ...
	15	Tai Khoan Staff	Phung D	000000004	40000.0000	11/6/2021
	20	Tai Khoan Staff	Phung D	000000004	500.0000	11/6/2021
	21	Tai Khoan Staff	Phung D	000000004	10000.0000	11/6/2021
	22	Tai Khoan Staff	Tran Van A12	000000001	1.0000	11/6/2021 3:02 ...
	23	Tai Khoan Staff	Tran Van A12	000000001	12.0000	11/6/2021 3:13 ...
▶	24	Tai Khoan Staff	Yummi	1234	80008.0000	11/6/2021 7:32 ...

Order Details

	ProductName	Quantity	Price	Total
▶	Name 1	1	1.0000	1.0000
	Name 2	2	2.0000	4.0000
	Name 3	1	3.0000	3.0000
	Name 6	2	40000.0000	80000.0

Logout

Back

Delete

Update

(4.35)

- + Step: 4.21 Staff click on the information of the customer to delete and press the “Delete” button (picture 4.35).
- + Step: 4.22 Staff click on the information of the customer to update and press the “Update” button Staff can press Remove or Minus button to change order quantity (picture 4.36).

frmOrderUpdate

— □ ×

Order ID

24

Staff Name

Tai Khoan Staff

Customer Name

Yummi

ID Number

1234

Total

0

Order Date

11/6/2021 7:32:44 PM

Order Details

	ProductName	Quantity	Price	Total
▶	Name 2	2	2.0000	4.0000
	Name 3	1	3.0000	3.0000
	Name 6	2	40000.0000	80000.0

Quantity

1

Minus

Remove

(4.36)